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Descriptions of some Larvae of Lepidoptera, respecting Sphingidae especially.

In this article is given a list, as full as the time and means now at my disposal allow, of the descriptions hitherto published of the larvæ of North American Sphingidae, together with a few descriptions, now published for the first time, of larvæ of Sphingidae and of other moths. It is due to Mr. W. V. Andrews, the author of some of the new descriptions, to say that he put some of his descriptions into the hands of the editors more than a year ago, and their publication has been delayed through no fault of his.

The descriptions which are contained in the monograph of the Sphingidae published by Brackenridge Clemens in the Journal of the Academy of Natural Sciences of Philadelphia, iv (1859), are reprinted in the Synopsis of the described Lepidoptera of North America, i (1862), compiled by J. G. Morris for the Smithsonian Institution. As the latter publication is the more accessible, it is referred to here to the exclusion of the references to the original monograph.

The following named works have been consulted (with others) in the preparation of this list, and are referred to by the abbreviations prefixed.

Abb. — The natural history of the rarer lepidopterous insects of Georgia (1797).

Can. Ent. — Canadian Entomologist, vol. i–ix (1868–1877).

Hy. Edw. — Henry Edwards' Pacific Coast Lepidoptera, Nos. i–xxiii (1873–1877).

Harr. Ins. Inj. Veg. — T. W. Harris' Treatise on some of the insects injurious to vegetation (ed. of 1862).

Harr. Ent. Corr. — T. W. Harris' Entomological Correspondence (1869).

Harr. Sphinx. — T. W. Harris' . . . Catalogue of the North American . . . Sphinx . . . , in the American Journal of Science and Arts, vol. xxxvi (1839).

Lintn. Ent. Contr. — J. A. Lintner's Entomological Contributions, Nos. i–iii (1873–

1876) and another (1877), in the 23d, 24th, 26th, 27th Annual Reports on the New York State Museum (1869–1873). [The pagination of No. ii is that of the Reports.]

Morr. — Brackenridge Clemens in J. G. Morris' Synopsis of the . . . Lepidoptera of North America, part i (1862).

Pr. E. S. Ph. — Proceedings of the Entomological Society of Philadelphia, vol i–vi (1861–1867).

Riley. — C. V. Riley's Annual Reports on the . . . Insects of . . . Missouri, i–ix (1869–1877).

Streck. — Herman Strecker's Lepidoptera, Rhopaloceres and Heteroceres . . . , Nos. i–xiii (1872–1876).

Trans. A. E. S. — Transactions of the American Entomological Society, vol. i–vi, p. 128 [containing nothing upon this subject].

Sphingidae. Description of the "annulets" and position of stigmata, by Lintner, in Ent. Contr., ii (1873), 109.

Sphinx sp. incogn. Brief and imperfect description of young larva, by Lintner, in Pr. E. S. Ph., iii (1864), 670.

Mr. Lintner writes that the larva here described is not that of a Sphinx, but of *Notodonta dictaea*, for which see his Ent. Contr., No. iv, to be published soon.

Sesia diffinis. Figure of *Sphinx fuciformis*, in Abb., pl. 43. Description of Abbot's figure, in Harr. Sphinx, 308–309. Brief description in Morr., 149. Good description, by T. L. Mead, in Can. Ent., ii (1870), 157–158. Excellent description of mature larva, by Lintner, in Ent. Contr., ii (1873), 109–110.

Sesia buffaloensis. Full description of larva in five stages, by Lintner, in Ent. Contr., ii (1873), 112–113.

Sesia tenuis (*Hemaris tenuis* Grote).

Length 35 mm. Green, with eight black stigmatal points. The anterior edge of first thoracic segment a little raised, studded with a double series of deep yellow tuberculate points. Venter deep reddish purple, shading to blackish laterally over the feet. Anal horn black, pointed, yellow on the sides at base, studded with blunt tubercles. Head above green; first thoracic segment tuberculate; the surface of the rest of the body is transversely wrinkled. Feeds on Snowberry [Symphoricarpus].

(*A. R. Grote*, Febr., 1878.)

Sesia thysbe. Brief description, by E. Doubleday, in Harr. Ent. Corr., 129, from an unpublished figure of *Sphinx pelasgus*, by Abbot. Full description, by Lintner, in Pr. E. S. Ph., iii (1864), 646.

Proserpinus gaurae. Figure of *Sphinx gaurae*, in Abb., pl. 31. Descr. of Abbot's figure in Morr., 154.

Thyreus nessus. Brief descr., by W. V. Andrews, in Can. Ent., ix (1877), 20. The same descr., sent to PSYCHE in November 1876, is stated to have been based upon three examples.

Thyreus abbotii. "Figure, by Abbot, in Swainson's Zoological Illustrations, part i (1821), pl. 60." Descr. of Abbot's figure, in Harr. Sphinx, 307. Full descr., discriminating the two sexes, in Morr., 156; others, by Riley, ii (1870), 78–79, and figure of full-grown larva, fig. 54; others, by Lintner, in Ent. Contr., ii (1873), 114–116. Brief descr., especially of young, in Harr. Ent. Corr., 284, and figure of full-grown larva, pl. iii, fig. 1. Evidence, by C. P. Whitney, in Can. Ent., viii (1876), 76, supported by A. R. Grote, in l. c., 100, that the supposed sexual distinctions are not reliable.

Enyo lugubris. Figure of *Sphinx lugubris*, in Abb., pl. 30. Descr. of Abbot's figure, in Harr. Sphinx, 307; also in Morr., 162.

Deidamia inscripta. Exceedingly brief descr., from memory, by J. Akhurst, in Streck., xiii (1876), 112.

Deilephila chamaenerii. Very brief descr., in Harr. Sphinx, 305; same copied, in Morr., 165; another, by G. J. Bowles, in Can. Ent., iii (1871), 145. Full descr., by Lintner, in Pr. E. S. Ph., iii (1864), 661; fuller, as "a supposed new species," by T. G. Gentry, in Can. Ent., vi (1874), 41–42; another, by Wm. Saunders, in Can. Ent., ix (1877), 64, 67.

Deilephila lineata. Figure of *Sphinx lineata*, in Abb., pl. 39. Good descr., in Harr. Sphinx, 304; essentially the same, in Morr., 164–165; another, by Lintner, in Pr. E. S. Ph., iii (1864), 662; others, including varieties, by Riley, ii (1871), 141–142, and figures of two varieties, fig. 61, 62. Riley's descriptions, falsely marked as a quotation, reproduced, by Saunders, in Can. Ent., ix (1877), 64, with Riley's figures, fig. 4, 5. Full description of *D. daucus* = *lineata*, and of a variety by Hy. Edw., xvi (1876), 2–3.

Philampelus vitis. Figure of *Sphinx vitis*, in Abb., pl. 40. Descr. of Abbot's figure, in Harr. Sphinx, 299; also in Morr., 179.

Philampelus satellitia. Very brief descr., in Harr. Sphinx,

300; still briefer, in Harr. Ins. Inj. Veg., 325; fuller, in Morr., 177. Brief descr., by Lintner, in Pr. E. S. Ph., iii (1864), 659–660. Best descr., by Riley, ii (1870), 76–78, and figures of young larva and of full-grown larva at rest and extended, fig. 52.

Mature larva olivaceous, deepest in tint on the inferior and lateral surfaces of the segments bearing prolegs; upper surface of the abdominal segments, and especially of the middle segments, of a pale rosaceous color, merging into green next a narrow, indistinct, pale lateral band; a dark dorsal stripe on the abdominal segments. A little in front of the middle of the spiracles of the third to the seventh abdominal segments is an irregularly ovoid pearly white spot, which extends from the anterior border of the segment to a little past the middle, trends backward and downward, and is bordered narrowly with black; the other spiracles are slaty blue, tipped above and below with white. Third thoracic and first to second abdominal segments with a few irregularly disposed, distinct black dots a little in advance of the middle of the segments. On the summit of the eighth abdominal segment is a nearly circular coral-red spot, with a large black pupil, bluntly pointed anteriorly, squarely docked and bordered with white posteriorly, surrounded by a narrow black border, and this by a slightly ragged, narrow white edging. Head and prolegs uniform brownish green. Length when at rest 66 mm.; breadth 12 mm. Feeds on *Ampelopsis quinquefolia*. Collected in Connecticut. (Described in 1862.)

(*S. H. Scudder.*)

Philampelus achemon. Figure of *Sphinx crantor*, in Abb., pl. 41. Very brief descr., in Harr. Sphinx, 300; still briefer, in Harr. Ins. Inj. Veg., 325, and figure of larva extended, fig. 150. Brief descr. of young and fuller descr. of mature larva, in Morr., 178. Good descr. of mature larva, by Lintner, in Pr. E. S. Ph., iii (1864), 660–661. Not very good figure of larva at rest, in Harr. Ent. Corr., pl. iii. fig. 11. Excellent descr., by Riley, ii (1870), 74–75, and figure of larva at rest, fig. 49. Full descr. of young and later stages, by Lintner, in Ent. Contr., ii (1873), 117–118.

Choerocampa tersa. Figure of *Sphinx tersa*, in Abb., pl. 38. Descr. of Abbot's figure, in Harr. Sphinx, 303–304; also, in Morr., 172.

Darapsa versicolor. Mere indication, in Streck., xiii (1876), 114. Exceedingly brief descr., by G. W. Peck, in Can. Ent., viii (1876), 239–240.

Darapsa choerilus. Figure of green and of pink larva of

Sphinx azaleae, in Abb., pl. 27. Descr. of Abbot's figures, in Harr. Sphinx, 302; also in Morr., 168. Brief descr., by Harris, in Ent. Corr., 283–284.

Darapsa myron, alias *Choerocampa pampinatrix*. Figure of *Sphinx pampinatrix*, in Abb., pl. 28. Good descr., criticizing Abbot's figure, in Harr. Sphinx, 302. Brief descr., in Harr. Ins. Inj. Veg., 326, and small figure of parasited larva, fig. 152. Poor colored figure of larva at extreme period of readiness for pupation [i. e., as usual, pink], in Harr. Ent. Corr., pl. i, fig. 10. Good descr., in Morr., 169. Excellent descr. of young and mature larva, by Lintner, in Pr. E. S. Ph., iii (1864), 663; similar descr., apparently based on Lintner's, by Riley, ii (1870), 71–72, and excellent figure of full-grown larva, fig. 44. Brief descr., by Saunders, in Can. Ent., iii (1871), 66, copying Riley's figure, fig. 25.

Smerinthus astylus. Very brief descr., in Streck., viii (1873), 56. Good descr. of caudal horn, by G. W. Peck, in Can. Ent., viii (1876), 239.

Smerinthus myops. Figure of *Sphinx myops*, in Abb., pl. 26. Descr. of Abbot's figure, in Harr. Sphinx, 291; another, in Morr., 208. Very brief descr., in Streck., vii (1873), 56. Note on variations, by G. W. Peck, in Can. Ent., viii (1876), 239.

Smerinthus excaecatus. Figure of *Sphinx excaecata*, in Abb., pl. 26. Very brief descr., in Harr. Sphinx, 290; same, except the words "larva granulated," in Morr., 209, together with very brief descr. of young larva and of Abbot's figure. Full descr., as an undetermined Smerinthus, by Lintner, in Pr. E. S. Ph., iii (1864), 666. Very brief descr. by Strecker, vii (1873), 55.

[If the crimson markings in Abbot's figure are replaced by yellow, the above descriptions agree in all except the color of the caudal horn. The larva described as *S. excaecatus*, by Lintner, in l. c., 665, is that of *S. geminatus*. For both these statements see Lintner, Ent. Contr., ii (1873), 127.]

Smerinthus ophthalmicus. Descr. of young and excellent descr. of mature larva, by Hy. Edwards, xvi (1876), 3.

Smerinthus geminatus. Full descr., erroneously as *S. excae-*

catus [which see], by Lintner, in Pr. E. S. Ph., iii (1864), 665. Excellent descr. of larva in five stages, by Lintner, in Ent. Contr., ii (1873), 119–121. Partial transcription of Lintner's later descr., by Strecker, vii (1873), 57.

Smerinthus sp. Good descr., by E. B. Reed, of an undetermined Smerinthus, in Can. Ent., i (1868), 40–41, which, as Saunders says, l. c., "corresponds very nearly to that of the larva of *Smerinthus excaecatus*, by Mr. Lintner" [i. e., *S. geminatus*].

This description is too good to lose, especially as it is associated with the mention of a remarkable habit, that of emitting a singing noise when disturbed, and contains some characters not attributed to any other Smerinthus larva referred to in this article, viz.: the paler green color of the back of the head, the semi-transpareney of the anterior segments, the central elongated black patch on the anal plate and the paler under surface, with a darker central line. Its special point of agreement with *S. geminatus* consists in the presence of "a reddish spot at the apex" of the head, geminatus having the two superior granulations on the head of an orange color; but both geminatus and excaecatus have a subdorsal thoracic line, while none such is attributed to Reed's larva or to *Cressonia juglandis* in the descriptions. Comparing the description of Reed's larva with those of *S. excaecatus*, *S. geminatus* and *C. juglandis*, and representing these four species respectively by the letters R, E, G and J, we find that all four are green, and thickly granulated, with a lateral stripe on each side of the green and granulated head [head pale reddish brown, in J, according to Clemens], and seven oblique stripes on each side of the green body, the granulations being larger by the side of the stripes. The head of R, G and J is large and triangular, that of G rising above the first segment and being flattened, that of J with the longest diameter twice that of the first segment and with quite pointed apex, while that of E does not rise above the first segment and is semi-conical; it is of a deep shining green color, with a reddish spot at the apex, and is paler green and granulated behind the stripes, in R; green, having the granulations within the lateral stripes larger than those without, in E; pale or apple-green, granulated in pale green anteriorly and in white laterally and having within the lateral stripes a row of larger rounded granulations increasing in size to the apex, where the two superior ones are papilliform and of an orange color, in G; and light green [pale reddish-brown, Clem.] in J: its lateral stripes are yellow in R, bright yellow and straight in G, pale yellow [Clem.] in J, but are, in E, "whitish or light green" [crimson, Clem.], "bordered by darker green posteriorly, commencing anterior to the ocelli, curving slightly, and uniting at the apex;" the body is apple-green in R, E and J, the anterior segments being semi-transparent in R, the body very pale dorsally in E, pale green, whit-

ish dorsally, in G, and pale in J; the under surface is slightly paler than the upper, with a darker central line, in R, while the green color is deeper below the stigmata in E and G; the seventh lateral oblique abdominal stripe is broader than the others and ends at the base of the caudal horn, and the oblique stripes are pale or faint, in R and E, these stripes being faint greenish yellow, the central stripes with a reddish tinge, in R, pale yellow, the seventh brighter, in E and G, and lighter green than the body, approaching white [crimson, edged beneath with pale yellow, Clem.], in J; in G, each of these stripes occupies about three-eighths of one segment, the whole of the next and six-eighths of the third, being straight on the central segment and curved posteriorly on the following one, "not angled at the incisure, — having within them a granulation on each annulation (eight to the segment)," while, in E, these stripes, in the first six segments, begin "at the margin of each somewhat below the lower portion of the stigma, traversing two segments in lines slightly concave anteriorly, forming an angle at the incisure — sometimes continued on a third segment, nearly reaching the vascular line," the seventh stripe beginning "on the posterior portion of the ninth segment on the sub-stigmatal flexure, and continued in nearly a straight line to the horn," the granulations of the seventh stripe being elongated into papillæ, and, in J, these stripes are made the more conspicuous from the increased size of the granulations toward the broadest part of the stripe, "each annulation adding to it a single granulation, extending over two segments and nearly reaching to the vascular line;" E has a "subdorsal thoracic line, pale yellow, extending over the second and third segments nearly horizontally, and on the fourth, curving upward and terminating near the vascular line," while G has the subdorsal thoracic line yellow, granulated with pearl-white, papillæ larger than those in the stripes, beginning "on the anterior of the first segment, diverging from the dorsum as it proceeds, and uniting at the sixth [or seventh] annulation of the fourth segment with the first lateral" stripe; the granulations of the body are small and greenish yellow in R, pointed and white in G, white [pale yellow, Abb.] in J, and small, white-tipped, and more conspicuous on the anterior segments in E; the caudal horn is at an angle of 20°, recurved backwards, purplish red and thickly granulated in R; nearly straight, 6 mm. long, violet [rose-colored, yellow laterally, and often yellow tipped, Lintn., 1864], and acutely granulated in G; straight, 2.5 mm. long, green, and broad at its base in E; and slender, 5 mm. long [brownish, with blackish spinules, Clem.], quite rough with numerous acute granulations, which are more prominent than those of the body, in J: the anal plate bears a central elongated black patch with larger granulations on each side, in R; is of a darker green, concolorous with the ventral region and is granulated, in G; and is light green, studded with conspicuous white granulations, in E: the stigmata are small, round, and dull red, in R; and red, except the first, which is orange, in G: the feet are pale green, spotted with red, and the prolegs greenish, semi-transparent, in R; are dark reddish

brown in J, and are roseate and brown, the prolegs green, in G: the legs, at tips, are rose-color, in E; the length of R is 38 mm., that of G, 31–50 mm., and that of E, 63 mm., with a breadth of 10 mm.; the mandibles of R are black; the maxillæ of E, within black; the labrum of E, rose-color.

The food-plant of R (Fagus) is more closely related to those of J (Ostrya, Carya, Juglans) than to the food-plants of either E (Acer) or G (? Prunus, ? Pyrus, Fraxinus, ? Ulmus, Salix). Harris, in Ent. Corr., 281, mentions the squeaking habit of the larva of *C. juglandis*.

Smerinthus modestus. Very brief descr. of the larva in six stages, by R. Bunker, in Can. Ent., ix (1877), 210–211.

Length about 40 mm.[1]; stout. Color, after first moult [this seems to correspond to the second moult, as described by Bunker], very dark green, with yellowish granulations, which form, on third and fourth segments, a sort of crest. A yellowish subdorsal line along each side of the dorsum. The seven sloping side lines slightly yellow; the seventh or anal line, running from the fourth proleg to the anal horn, thickly granulated. Anal horn yellow. Feet yellow, tipped with pink. As the larva matures, all the yellows become white, the body becomes pale green, and the anal horn nearly disappears. Breathing holes edged with red. Head triangular, with heavy granulations. Feeds on Poplar (Populus) in July and August. (*W. V. Andrews*, September, 1877.)

Cressonia juglandis. Figure of *Sphinx juglandis*, in Abb., pl. 29. Descr. of Abbot's figure, and very brief other descr. of *Smerinthus juglandis*, in Harr. Sphinx, 292; brief descr. of same, in Morr., 213; additional characters, by Clemens, quoted by Grote and Robinson, in Pr. E. S. Ph., v (1865), 187. Good descr., by Lintner, in Pr. E. S. Ph., iii (1864), 668. Brief descr., by Harris, in Ent. Corr., 281; another, briefer, by Strecker, vii (1873), 54.

Ceratomia quadricornis. Good descr., in Harr. Sphinx, 293; another, brief, in Harr. Ins. Inj. Veg., 323–324, and a good figure, fig. 149; another, in Morr., 205. Very brief descr. of young larva, by Harris, in Ent. Corr., 282; another, as *C. amyntor*, by C. S. Minot, in Can. Ent., ii (1869), 28. Excellent series of descriptions of the several stages, deserving, like many of the subsequent descriptions of larvæ by the same author, to rank as a classic model, by Lintner, in Pr. E. S. Ph.,

[1] Mr. Andrews writes as follows, under date of Jan. 18, 1878: "For myself I earnestly protest against any metrical terms being used in any thing you may be pleased to publish from my pen, and if you choose to use the jargon in my papers, I should like you to note my protest."

i (1862), 286–290. Brief mentions of the brown coloration of some larvæ, by W. V. Andrews, in Can. Ent., viii (1876), 40, and by R. Bunker, in l. c., 120.

Daremma undulosa.

Length about 75 mm.; rather slender, smooth. Color of the back and about half-way down the sides a beautiful bright green; under parts dull green. The seven sloping side lines yellowish white. Breathing holes pink or lilac. Head bordered with pinkish white. Legs lilac. Anal horn tinged with lilac. Feeds on Lilac (Syringa) and Privet (Ligustrum) in June and July. (*W. V. Andrews*, December, 1876.)

Diludia jasminearum. Brief descr. of *Sphinx jasminearum*, by Strecker, xiii (1876), 116.

Diludia catalpae. Brief descr. of an undetermined species of Sphinx, by E. Doubleday, in Harr. Ent. Corr., 127–128, from an unpublished figure by Abbot. Mr. A. R. Grote says, in a letter dated Febr. 1, 1878: "The larva on Catalpa, p. 127, is figured and described by Boisduval, Sphing., pl. ii, figs. 1 (imago), 2 (larva), as *Sphinx catalpae* Bd., from Abbot's drawings. The species has not yet been seen in our cabinets." Boisduval's figure is mentioned by Strecker, xiii (1876), 120.

Pseudosphinx tetrio. "Beautifully figured," by F. Poey, in his Centurie de Lépidoptères de l'île de Cuba, Dec. ii (1832); descr., by H. Burmeister, in his Systematische Uebersicht der Sphingidae Brasiliens [ex Abhandl. Naturf. Gesellsch. Halle, iii (1856), Sitzungsb., 58–75], 8; brief descr. of caudal horn, by Poey, quoted by Grote and Robinson, in Pr. E. S. Ph., v (1865), 65, — from which source the above citations are taken. Brief descr. of Poey's figure, in Morr., 185.

Macrosila rustica. Figure of *Sphinx chionanthi*, in Abb., pl. 34. Brief descr. of Abbot's figure, in Morr., 187.

Macrosila [*Sphinx*] *carolina.* Figure of *S. carolina*, in Abb., pl. 33. Exceedingly brief descr., in Harr. Sphinx, 294. Figure, in Harr. Ins. Inj. Veg., 322, fig. 146. Brief descr., in Morr., 189–190; others, in Harr. Ent. Corr., 282–283.

When first from the egg the head is smooth, and covered with rather short sparse hairs, which also clothe the last two segments of the body, otherwise smooth; the caudal horn is very finely serrate. At its next stage the larva has lost its smooth appearance, the head and body being covered with rough points, while the caudal horn has become thorny; there are but

few hairs upon the body, and these are mostly confined to the terminal segment and the head, where they are much shorter than in the first stage. When 25 mm. long, the hairs have entirely disappeared, excepting one or two on the terminal segment, which are directed backward; as in the earlier stages the larva is green, but hitherto the markings are confined to a dusky streak along the back, largest on the front of each segment, and a fainter streak along the middle of the sides: now the markings of the full grown larva first appear; until this period also, the spiracles have been testaceous with pale green borders: now they are black, with a faint purplish areola. When 45 mm. long, the head loses its rough points, and its surface becomes obscurely shagreened; the spiracles again become testaceous, or of a pale straw-color, surrounded by a ring of jet black, and this again by purplish, which also is indistinctly edged with black. These peculiarities continue until the final stage, excepting that the edges of the stigmatal openings become dark, and the purplish annular ring, as well as the outer indistinct black bordering, become proportionally broader.

The full grown larva is green (of varying shades), with a moderately narrow oblique white stripe, bordered above with dark brown, crossing the 1–8 abdominal segments at an angle of 45° from below upwards, starting at the front edge of each segment directly in front of the spiracles. The 8th abdominal segment has also a second streak parallel to the first, being a continuation of that on the preceding segment, and extending a little way up the side of the caudal horn. Fainter streaks of the same color also cross the same segments, each commencing at the same point and running backward with a slight downward tendency to the posterior edge of the segment, so as to form a broken substigmatal band. On the eighth abdominal segment the streaks do not reach the posterior edge. The last segment is edged with white. There are also faint dusky oblique streaks on the 2–8 abdominal segments (often obsolete) in continuation of the oblique white streaks of the preceding segments, and nearly uniting at their posterior end with those of the opposite side. Minute circular white dots, bearing a microscopic hair and edged with purplish brown, are scattered over the upper surface of the body, especially on the anterior segments. The caudal horn is slightly curved backward, and is generally held at an angle of 45°; it is of a bluish color, whitish on the sides, and studded with black thorns, or sometimes the whole horn is black; it varies in length in proportion to the body at different stages, as will be seen by the following measurements.

Length of body 5 mm.; breadth of same, .85 mm.; length of horn, 2.5 mm.

"	"	12.5	"	"	"	1	"	"	"	3	"
"	"	16	"	"	"	2	"	"	"	4.25	"
"	"	25	"	"	"	3	"	"	"	5	"
"	"	45	"	"	"	9	"	"	"	8.5	"
"	"	75	"	"	"	17	"	"	"	8.5	"

When the caterpillars have grown to half their size, if disturbed, they make a snapping sound with their mandibles resembling the click of sparks from an electrical machine. Feeds on *Nicotiana tabacum*. Collected in Connecticut. (Described in 1859.) (*S. H. Scudder.*)

Macrosila [*Sphinx*] *quinquemaculata*. Exceedingly brief descr., in Harr. Ins. Inj. Veg., 320, and a figure, fig. 142. Brief descr., in Morr., 190–191. Good descr. of several varieties, by Lintner, in Pr. E. S. Ph., iii (1864), 648–649. Descr., by E. Doubleday, in Harr. Ent. Corr., 126, from an unpublished (?) figure by Abbot. Copy of Harris's figure, by Riley, i (1869), 94, fig. 38 A. Good descr. of two varieties, by T. G. Gentry, in Can. Ent., vi (1874), 88–89.

The mature larva closely resembles that of *M. carolina*, differing from it in the following peculiarities. The oblique stripes are edged in front by a black band made up of somewhat distant delicate lines transverse to the direction of the band, which continue upon the succeeding segments as a border to the dusky extension of the oblique white stripes; the oblique white stripes have a slight bluish tinge above, which partially covers the adjacent black lines; the broken stigmatal band of *M. carolina* is replaced by scattered transverse lines; and, in addition, a narrow stripe, made up of broken and bent black lines, runs horizontally along the edge of the fold just above the prolegs; the last segment is scarcely edged with white, and there are no white dots upon the body. The back of the head is edged with black, the spiracles are of a lighter color, and the horn is smaller, and of a reddish color tipped with black. Feeds on *Solanum tuberosum*. (Described in 1859.) (*S. H. Scudder.*)

Macrosila [*Sphinx*] *cingulata*. Figure of *Sphinx convolvuli*, in Abb., pl. 32. Descr. of Abbot's figure, in Harr. Sphinx, 294; another, in Morr., 189. Good descr. of *S. convolvuli*, by Harris, in Ent. Corr., 282. Excellent descr. of six varieties, criticizing Abbot's figure, by Lintner, in Pr. E. S. Ph., iii (1864), 650–651.

Sphinx drupiferarum. Figure, in Abb., pl. 36. Descr. of Abbot's figure, in Harr. Sphinx, 294. Brief descr., in Morr., 197; another, by Lintner, in Pr. E. S. Ph., iii (1864), 658. Good descr. of young and of mature larva, by Wm. Saunders, published by E. B. Reed, in Can. Ent., iii (1871), 5–6, and a figure of mature larva, fig. 1.

Sphinx kalmiae. Figure, in Abb., pl. 37. Descr. of Abbot's figure, in Harr. Sphinx, 295. Good descr., in Morr., 196.

Excellent descr., by Lintner, in Pr. E. S. Ph., iii (1864), 657–658.

Sphinx cinerea. Good descr., by Lintner, in Pr. E. S. Ph., iii (1864), 655; another, by Harris, in Ent. Corr., 282, and a poor, small figure, pl. ii, fig. 6. The following description belongs very probably to this species.

Head green; lateral bands, running from near its summit to the base of the antennæ, dirty white, edged with pink; triangle and antennæ of the same color, excepting the tips of the latter, which are faint brownish red; mandibles black; other mouth-parts faint brownish red. Body dark green, darkest beneath, with a hoary aspect above on the abdominal segments. The seven oblique sphingial bands are dirty white edged above with dark green, and each extends from the anterior edge of the segment, a little below the spiracle, over that whole segment and two-thirds of the succeeding, on which it curves backward; the last band extends to the base of the caudal horn. Terminal segment with a scarcely discernible yellowish green edge. Caudal horn pale greenish blue above, pale green below, with two obsolescent stripes of yellowish white; it is reddish at the end, with a black tip, and is covered, especially beneath, with white dots and black specks. Spiracles black, surrounded by a white areola. Jointed legs hairy, faint brownish red, with black spots on the inside and black claws; prolegs fringed with hairs, and all but the anal pair faint brownish red at the tip. Length 77 mm.; breadth 12 mm.

In younger stages the bands are sometimes pure white, the dorsum white with a greenish tinge, the edging of the last segment purple, a blush of the same extending to the horn, which is purple; the legs are yellowish green marked with red, and the head sometimes brownish white, the bands white. Feeds on Lilac (*Syringa vulgaris*). Collected on Cape Cod, Mass. (Described in 1859.) (*S. H. Scudder.*)

Sphinx gordius. Exceedingly brief descr., by Harris, in Sphinx, 295; same copied, except saying "rusted" instead of "rust-red," by Morr., 198.

Sphinx eremitus. Brief description of young and full description of mature larva of an unknown species, by Lintner, in Pr. E. S. Ph., iii (1864), 652–653. Mr. Lintner writes that this is the larva of *Sphinx eremitus* Hübn. = *sordida* Harr.

Sphinx lugens. Excellent descr., by F. H. Snow, in Observer of Nature, iii (1875), No. 1; very brief extract from Snow's descr., by Strecker, xiii (1876), 115.

Dolba hylaeus. Figure of *Sphinx prini*, in Abb., pl. 35. Exceedingly brief descr., probably of Abbot's figure, by Harris, in Sphinx, 296; another, of Abbot's figure, in Morr., 204.

The following description belongs very probably to this species.

Penultimate stage. General color green. Head scabrous, and, like the body, thickly covered with raised yellow dots; a narrow yellow stripe on each side, the two nearly meeting on the summit and extending to the base of the antennæ: just behind its lower extremity a black dot; mouth-parts black. The seven oblique spingial bands extend each from the anterior edge of the segment, a little below the spiracle, over that whole segment and two-thirds of the succeeding, upon which they are less oblique; these bands vary from yellow, much paler and fainter on the posterior segment, to red, deepening to crimson anteriorly and changing posteriorly to a slightly rosy white, and upon the succeeding segment to greenish yellow; the last band, however, extends with double width upon the eighth abdominal segment, and, with a color as deep as upon the anterior segment, one-third way up the caudal horn: these bands are all bordered above by a band of equal breadth, of a crimson color, which dies out just before reaching the posterior border of the segments, excepting on the eighth segment, where it continues, as a delicate edging of the lower band, to the extremity of the horn, which is tipped with dark brown, while the basal third of the horn above, between these edgings, is green; the rest of the horn not covered by these markings is black. Edges of the last segment pale yellow; spiracles testaceous with white areola. Length 28 mm., breadth 5 mm.

Mature larva. Head scabrous; color and bands as in previous stage, excepting that the latter are parti-colored, being yellowish green in front and black behind; antennæ and labrum yellowish; other mouth-parts black. The sphingial bands occasionally do not pass to the succeeding segment, but usually they do, and they may be either yellow or white (in the latter case with a yellow tinge posteriorly), edged as before with crimson, and this crimson often followed above by a narrow margin of black, sometimes broken, and extending on the eighth abdominal segment as an edging of the yellow stripe (which here is always yellow), and on this segment never wholly wanting. The horn is black on the sides, with a slight lateral yellow stripe; green above and beneath. The whole body profusely sprinkled with circular white dots having a black areola, but the areola often wanting on the upper surface and sides of the abdominal and first thoracic segments, or the spots may be altogether wanting on the upper surface of the same segments. Spiracles testaceous, changing afterwards to a bright reddish color; prolegs light brown. Length 57 mm. Feeds on Sweet Fern (*Comptonia asplenifolia*). Collected on Cape Cod and at Princeton, Mass., and in Connecticut. (Described in 1869.) (*S. H. Scudder.*)

Anceryx ello. Figure, by M. S. Merian, in "Insectes de Surinam, page and plate 61," cited and exceedingly briefly described by Harris, in Sphinx, 297; Harris' descr. reproduced in Morr., 201.

Hyloicus plebeius.

Head light pea green, somewhat scabrous, with a black band on each side, passing from near the top of the head to a point behind the antennæ. Antennæ and labium white; the other mouth-parts black. Body light pea green; the seven oblique sphingial bands are formed of a narrow white stripe, edged posteriorly with lemon-yellow and anteriorly with black, in front of which the green of the body is darker than elsewhere; the black does not quite reach the edges of the segments, the white dies out a little sooner than the black, while the yellow reaches both edges, and in the last stripe extends over to the base of the caudal horn; the spiracles, which are faint brownish red, are half immersed in the yellow stripes. The caudal horn curves only on its apical half, and is light blue, covered with black tubercles irregularly, and so thickly that the terminal third is entirely black. Last segment and proleg dotted with black warts, and the edges furnished with a few very short hairs. First joint of jointed legs white, with a black spot on the outer surface; the others black, and all furnished with a few white hairs. Prolegs green, the tip furnished exteriorly with a large black spot; the hooks black. Length 75 mm., breadth 11 mm. Feeds on *Syringa vulgaris*. Collected on Cape Cod, Mass. (Described in 1859.) (*S. H. Scudder.*)

Hyloicus saniptri. Good descr. of a larva perhaps of this species, by Strecker, xiii (1876), 118.

Hyloicus cupressi. Brief descr. of an undetermined species of Sphinx, by E. Doubleday, in Harr. Ent. Corr., 128, from an unpublished figure by Abbot. Mr. A. R. Grote says, in substance, in a letter dated Febr. 1, 1878; "I think that the larva on p. 128 may be *Sphinx cupressi* Boisduval, Sphing., pl. ii, figs. 3–5, known from Abbot's figures alone, which are reproduced by Boisduval." Boisduval's figure is mentioned by Strecker, xiii (1876), 120.

Ellema coniferarum. Figure of *Sphinx coniferarum*, in Abb., pl. 42. Descr. of Abbot's figure, in Harr. Sphinx, 297; another, in Morr., 199, exceedingly brief descr. of same, in Harr. Ins. Inj. Veg., 328; another, by Strecker, xiii (1876), 116. [Harris' descr. of the imago of *S. coniferarum* belongs, not to this species, but to *E. harrisii*; the descr. of the larva, however, being copied, belongs to *E. coniferarum*.]

Ellema harrisii. Exceedingly brief descr., from memory, by G. Newman, in Morr., 216; not much better descr., by Strecker, xiii (1876), 117. Full descr., by Lintner, in Pr. E. S. Ph., iii (1864), 669. Figure, by Lintner, in Ent. Contr., i (1873), pl. viii, fig. 8.

Full-grown larva about 50 to 65 mm. in length, the thickness of an ordinary goose-quill at the abdominal segments, tapering from the fourth segment to the head. The ornamentation consists of alternate green and white longitudinal stripes, the dorsal stripe green, spotted with red, the red spots, when the larva is in repose, sometimes forming a stripe. The head is angular; front red, with a white or pinkish white border; the collar green. Legs green, prolegs red. Last segment bordered with red. In repose the head appears to be set on the body at an angle of 50° or 60°, so that a line drawn along the back to the tip of the head would be longer than one drawn over the insertion of the legs. This larva bears a striking resemblance, in shape, color, and manner of feeding, to the larva of the European *Achatea spreta* Fab., as given in Curtis' Genera of Insects, pl. 117, and it is noteworthy that the food-plant, pine, is the same for both species. *A. spreta* tapers less, and has no red markings, but in other respects is very similar, and one would like to know whether its attitude, when not feeding, is like that of *E. Harrisii*, namely, stretched at full length on the twig of its food plant. I took the larva in September, in New Jersey. (*W. V. Andrews*, October, 1876.)

Ellema pineum. Descr., by Lintner, in Ent. Contr., i (1873), 38.

[Note. References to Boisduval's work on the Sphingidae (1874), which was not obtained in time for this issue, will be given in the continuation of this article.]

Arctia arge. Brief descr., by Harris, in Ins. Inj. Veg., 346. Fuller descr., by Harris, in Ent. Corr., 286–287; another, by S. H. Peabody, in Can. Ent., vi (1874), 98.

This moth is by no means rare, but I find few people acquainted with its larva. Full grown it presents the following appearance: Length 38 to 45 mm.; cylindrical, that is, of about the same size from end to end. Ground color dark brown, with a dorsal and two subdorsal longitudinal lilac or brownish-pink stripes, the shade varying sometimes; dorsal stripe the broadest. Two rows of short oblique lines in the region of the stigmata. Legs black; prolegs reddish-brown. Body sparsely haired; the hairs brown, proceeding from eight tubercles on each segment; hairs about the stigmata reddish-brown. The very small larvæ, when first hatched, look like a bundle of very long brown hairs. After the second moult the lines appear distinctly, under a low power. Food-plants, Rumex and Plantago; the former preferred. The eggs are white when deposited, and then pinkish; they hatched out in about ten days. (*W. V. Andrews*, Nov., 1876.)

B. Pickman Mann.

(*To be continued.*)